



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION 10

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**OFFICE OF
ENVIRONMENTAL
CLEANUP**

MEMORANDUM

DATE: October 20, 2016

SUBJECT: Kinder Morgan Linnton Terminal – Pore Water Sampling and Analysis Plan – Fall 2016
ECSI #1036
October 11, 2016

FROM: Eva DeMaria, Remedial Project Manager *EDM*

TO: Mike Romero, Project Manager
Oregon Department of Environmental Quality

Following are the United States Environmental Protection Agency's (EPA's) comments on the October 11, 2016 Kinder Morgan Linnton Terminal - Porewater Sampling and Analysis Plan – Fall 2016. Ch2m on behalf of Kinder Morgan Liquids Terminal (KMLT) Linnton Terminal (Site) prepared the sampling and analysis plan (SAP). The Site is located at 11400 NW Saint Helens Road in Portland, Oregon and is listed in Oregon Department of Environmental Quality's (DEQ's) cleanup program as ECSI #1036. The site is located on the west bank of the Willamette River near River Mile 4W.

EPA understands that the purpose of the SAP is to describe a porewater investigation to generate the data needed to facilitate a source control decision for the Site. Groundwater monitoring in 2012 determined that arsenic in groundwater was above screening level values and additional investigation is being conducted to evaluate if additional source controls are needed to mitigate chemicals of interest (COIs) migrating to the Willamette River.

EPA's comments are presented in the following sections. Comments are separated as: "Primary," which identify concerns that must be resolved to achieve the assessment's objective; "To Be Considered," which, if addressed or resolved, would reduce uncertainty, improve confidence in the document's conclusions, and/or best support the assessment's objectives; and "Matters of Style," which substantially or adversely affect the presentation or understanding of the technical information provided in the report.

Primary Comments on the SCE Report

1. The SAP describes that 2 micrograms per liter ($\mu\text{g/L}$) is the default background concentration for arsenic and identifies the source as the *Default Background Concentrations for Metals, Oregon Department of Environmental Quality* (October 28, 2002). This document appears to have been updated in 2013 and no longer includes background concentrations for groundwater. It is unclear if 2 $\mu\text{g/L}$ is still considered the default background concentration by DEQ and the SAP should be revised to clearly explain why the value is valid.
2. The SAP should include a description of the decision criteria that will be used to confirm that samples are representative of porewater discharging to the Willamette River and minimally

influenced by river water. This discussion could consider an increased sampling depth that would potentially minimize influence from surface water.

3. The rationale for selecting chemicals of interest (COI), other than arsenic, for porewater sampling is incomplete in the SAP. The SAP should explain why COIs were selected for porewater analysis. For example, the SAP describes that benzene, toluene, ethylbenzene, and xylenes (BTEX) will be analyzed at PW-STA925 and PW-STA1025, but there is no explanation why these locations were selected for BTEX analysis. Additionally, it is unclear why BTEX would not be analyzed at the reference location PW-STA005 for comparison purposes.
4. Section 3 states that PW-STA1025 is intended to represent background or a location not influenced by the KMLT Site. This does not seem likely because Figure 3 of the Groundwater Monitoring Report (ch2m 2016) indicates that groundwater in the vicinity of MW-8 and PZ-10 flows towards PW-STA1025. In January 2014 (same season as groundwater flow shown in Figure 3), MW-8 had a concentration of TPH-d at 480 µg/L and a concentration of benzene of 4.3 µg/L (above the preliminary remediation goal [PRG] of 0.4 µg/L for RAO 4). PW-STA1025 is or likely has been impacted by COIs at the KMLT; thus, an alternate location should be selected to represent background or non-site influenced conditions.
5. Section 4.0 should provide a brief discussion on the C10 to C12 Aliphatic analyses that will be used in trying to achieve a PQL below the PRG of 2.6 µg/l. The planned analyses could include total petroleum hydrocarbons (TPH).
6. The SAP should include a schedule with a targeted start date and a description of the number of rounds of sampling that will be performed. At minimum, a list of milestones and estimated dates would add value to the SAP.
7. Sample locations downgradient of areas where a sheen has historically been observed in the Willamette River should be monitored for sheen in porewater.

To Be Considered Comments

1. Figures 3B and 3C and the SAP should include a note that porewater samples from TW-3, TW-4, and TW-5 were collected when short-term flow reversals within transition-zone occurred and the samples included river water. The mixture of river water and porewater resulted in distinct differences in arsenic and geochemical concentrations, as described in Section 3.1.5 of the Groundwater and Bank Soil Source Control Evaluation (ch2m 2015).
2. A statement could be added to Section 2.0 Purpose of Investigation to describe a supplemental objective that porewater sample results can be used to support characterization of groundwater discharging to the river sediments and surface water for use in future remedial evaluations associated with the Portland Harbor Superfund Site.

3. The analytical reporting limits should be included in Table 1 so they can easily be compared to the PRGs. Alternatively, Attachment A could include the PRGs. The revised table will support supplemental text discussion on specific analytical methods.

Matter of Style

1. A groundwater gradient map would be helpful for understanding how upland detections of COIs may be present at porewater sample locations.

References

ch2m. 2016. Annual Groundwater Monitoring Report 1st Quarter through 4th Quarter 2015 Linnton Terminal Portland, Oregon DEQ ECSI No. 1096. January.

ch2m. 2015. Groundwater and Bank Soil Source Control Evaluation Kinder Morgan Linnton Terminal Oregon Department of Environmental Quality ECSI No. 1096. December.